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विद्युत तकनीकी शब्दावली

भाग 76 ट्रांसडक्टर्स

Indian Standard

ELECTROTECHNICAL VOCABULARY

PART 76 TRANSDUCTORS

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Basic Electrotechnical Standards Sectional Committee, ET 01

NATIONAL FOREWORD

This Indian Standard (Part 76) which is identical with IEC Pub 50 (431) (1980) 'International electrotechnical vocabulary — Chapter 431 : Transductors', issued by the International electrotechnical Commission (IEC), was adopted by the Bureau of Indian Standards on the recommendation of the Basic Electrotechnical Standards Sectional Committee and approval of the Electrotechnical Division Council.

Only the English text given in the IEC publication has been retained while adopting as Indian Standard, and as such the page numbers given here are not same as in IEC publication.

Indian Standard
ELECTROTECHNICAL VOCABULARY
PART 76 TRANSDUCTORS

SECTION 431-01 — TERMS RELATING TO CONSTRUCTIONAL ELEMENTS

431-01-01
transductor

A device consisting of one or more ferromagnetic cores with windings, by means of which an a.c. or d.c. current or voltage can be varied by an independent voltage or current, utilizing saturation phenomena in the magnetic circuit.

431-01-02
transductor element

One of the cores with its windings which form part of a transductor.

431-01-03
excitation winding

A winding of a transductor element by means of which excitation is obtained.

431-01-04
power winding

A winding of a transductor element through which the load current flows.

431-01-05
control winding

An excitation winding by means of which the output power is controlled from an external source.

431-01-06
bias winding

An excitation winding carrying a current used for displacing the mean operating point on the static characteristic.

431-01-07
self-excitation winding

An excitation winding, by means of which self-excitation is obtained.

431-01-08
auto self-excitation valve

A valve connected in series with a power winding of a transductor to obtain self-excitation.

SECTION 431-02 — TERMS RELATING TO PHYSICAL QUANTITIES

431-02-01
output voltage; load voltage

The voltage which is transferred to the load impedance in a circuit which includes a transductor.

431-02-02
absorbed voltage

The voltage which is absorbed by a transductor in a circuit.

431-02-03
control current

The current which flows in a control winding of a transductor.

431-02-04
control voltage

The voltage across the control terminals of a transductor.

431-02-05
static characteristic
(of a transductor);
transfer curve
(of a transductor)

The graphic representation of the relation between an output quantity and a control quantity under steady-state conditions.

431-02-06
voltage ratio ;
voltage amplification

The ratio under steady-state conditions of a small change of the output voltage to the corresponding change of the control voltage at specified load and operating conditions.

431-02-07
current ratio ;
current amplification

The ratio under steady-state conditions of a small change of the output current to corresponding change of the control current at specified load and operating conditions.

431-02-08
power amplification

The ratio under steady-state conditions of a small change of the output power to the corresponding change of the control power at specified load and operating conditions.

431-02-09

total time constant

The time constant of the response of an output quantity of a transductor to a sudden small change of the control voltage at specified load and operating conditions.

431-02-10

residual time constant

The time constant of the response of an output quantity of a transductor to a sudden small change of the control current at specified load and operating conditions.

431-02-11

input time constant

The difference between the total time constant and the residual time constant.

431-02-12

response time

The time from a sudden change of a control quantity until the corresponding change of an output quantity has reached a specified fraction of its final value.

431-02-13

saturation inductance

That inductance of a power winding which corresponds to small flux variations within the saturated range of the magnetizing curve.

431-02-14

saturation reactance

The reactance corresponding to the saturation inductance at the frequency of the alternating current power source.

431-02-15

figure of merit

The ratio of the power amplification to the response time.

SECTION 431-03 — MODES OF EXCITATION

431-03-01

excitation of a transductor

The action of a winding (excitation winding) or of an auxiliary magnetomotive force for the purpose of modifying the magnetic conditions of a transductor element.

431-03-02

self-excitation

The procedure by means of which the value of an output quantity influences the excitation of a transductor.

431-03-03

auto self-excitation ;

self-saturation

The procedure by means of which self-excitation is obtained with the aid of the power winding.

431-03-04

separate self-excitation

The procedure by means of which self-excitation is obtained with the aid of a separate excitation winding.

431-03-05

critical self-excitation

The self-excitation which results in infinite steepness of part of the static characteristic of a transductor.

431-03-06

ideal self-excitation

The degree of self-excitation which would result in critical self-excitation of a transductor whose cores have infinite permeability in the unsaturated range and whose self-excitation rectifier is ideal.

SECTION 431-04 — CLASSIFICATION

Note. — The terms and definitions related to rectifier connections are given in Chapter 551 of the IEV : Power Electronics.

431-04-01

series transductor

A transductor in which the corresponding power windings of the transductor elements belongsing to one phase are connected in series.

431-04-02

parallel transductor

A transductor in which the corresponding power windings of the transductor elements belonging to one phase are connected in parallel.

431-04-03

auto-transductor

A non self-excited transductor in which the same windings serve both as control windings and as power windings.

431-04-04

auto self-excited transductor

A self-excited transductor, the self- excitation of which is obtained by means of valves in series with the power winding of each transductor element.

431-04-05

rectifier connection

(of an auto self-excited transductor)

A connection of an auto self-excited transductor the self-excitation of which is obtained by connecting the power winding of each transductor element in series with a valve arm of a rectifier connection.

431-04-06

complete bridge connection

(of an auto self-excited transductor)

A connection of an auto self-excited transductor the self-excitation of which is obtained by inserting the power windings in all the valve arms of a rectifier bridge connection.

431-04-07

incomplete bridge connection

(of an auto self-excited transductor)

A connection of an auto self-excited transductor the self-excitation of which is obtained by inserting the power windings in half the valve arms of a rectifier bridge connection.

431-04-08

free current operation ;

natural excitation

A mode of operation of a transductor in which the waveshape of the output current is developed without influence from the control circuit.

Example : the mode of operation of a parallel transductor or of a series transductor with low control circuit impedance.

431-04-09

constrained current operation ;

forced excitation

A mode of operation of a transductor in which the waveshape of the current is determined by the forced waveshape of the control current.

Example : the mode of operation of a series transductor with high control circuit impedance.

431-04-10

voltage controlling transductor

A transductor which acts as a voltage source in the power circuit.

431-04-11

current controlling transductor

A transductor which acts as a current source in the power circuit.

431-04-12

half-cycle transductor

1) A transductor, the control of which during each half-cycle is entirely determined by the value of the control quantity during the immediately preceding half-cycle.
2) A transductor such that the delay from a change of the control quantity to the subsequent change of the controlled quantity is one half-period.

SECTION 431-05 — APPLICATIONS

431-05-01

transductor regulator

A transductor for regulating an electrical quantity.

431-05-02

magnetic amplifier

transductor amplifier

An amplifier in which the amplification of an electrical quantity is produced by a transductor.

431-05-03

measuring transductor

A transductor utilized to measure a voltage or current in one circuit by producing a voltage or current in another circuit at a determined ratio to the quantity measured.

431-05-04

direct current measuring transductor

A measuring transductor utilized to measure a direct current in a circuit.

431-05-05

transductor reactor

A transductor utilized as a reactor.

431-05-06

transductor fault

limiting coupling

A transductor used to limit the short-circuit current in a power system.

431-05-07

magnetic phase shifter

(for trigger equipment)

A transductor utilized as a phase shifter for trigger equipment.

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